RESEARCH PROBLEM STATEMENT #TS-507

I – Problem Title

Improve communications between TMC and TMS elements in a rural environment through a system that is deployable statewide (2004MOB.10)

II – Research Problem Statement

There is an unmet need for a reliable and economical communications system between TMS field elements and the TMC in rural areas. In the rural parts of most of the Districts telephone and cellular coverage is not available. Satellite coverage is available in most areas but it is very expensive. In a rural environment, where communication is available, the costs are quite high, and data transfer rates and reliability are low.

III – Objective

Develop a reliable system to maintain communication between the TMC and TMS elements in a rural environment by:

* Conducting a literature search for communications methods tried elsewhere to connect field elements to the TMC.
* Choose the most promising technologies for connection in rural environment and develop test installations to prove which is most reliable and cost effective.
* Consider the use of Current State systems including 800 Mhz and microwave backbone.
* Document results in handbook form for utilization by other Districts in future installations.

The collection system could be expanded to include other field elements such as WIM and loops for traffic counts. The TMS field elements common to the rural environment are HAR, EMS, fixed and portable CMS, CCTV, and RWIS.

IV – Background

Current technology uses cellular and hardwired telephone lines which are not always easily available, have slow data transfer rates, often are not reliable and have high ongoing costs. Some elements have been connected using TCIP through cable connection but this is has proven to be very expensive as well. Some preliminary strategies have been discussed with HQ Maintenance Telecommunications to investigate the potential of using a newly established radio frequency.

V – Statement of Urgency and Benefits

A reliable, standardized, economical system is essential for the collecting of information from the rural TMS field elements. Currently communicating consistently with these elements is difficult and very costly. The crucial time for data recovery i.e. inclement weather, natural disaster, seems to be when we experience difficulties with communication. The cost savings that the Department could realize would be very significant.

VI –Related Research

Wireless data communications testing conducted across San Luis Obispo County to support EDAPTS transit management system development and operation.

VII – Deployment Potential

The deployment could be statewide, within a few years.